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State Geological Survey Division

ENR

Natural Resources Building
615 East Peabody Drive
Champaign, IL 61820
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Illinois Department of
Energy and Natural Resources

REFERENCE #2
SITE NAME South Central Terminal.
SITE ID ILD094309210

September 9, 1983

GEOLOGIC REPORT ON THE GROUNDWATER CONDITIONS FOR A DOMESTIC SUPPLY IN SECTION 28, T. 11 N., R. 1 E., CHRISTIAN COUNTY, ILLINOIS

By

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Hydrogeology and Geophysics Section

This report is prepared in response to a request by Mr. Richard S. Wolters, Bi Petro, Box 3245, Springfield, Illinois, 62708, for information on the groundwater conditions in the NE¼ of Section 28, T. 11 N., R. 1 E., and the N½ SE¼ of Section 28, T. 11 N., R. 1 E., Christian County, Illinois. The land surface elevation of the area under study is approximately 635 to 685 feet above sea level. Surface drainage is toward the south into Coal Creek. A groundwater supply is needed for domestic use.

Enclosed are excerpts from Illinois State Geological Survey Circular 248, which describes the groundwater conditions in east-central Illinois, including Christian County. Location of the property under study is indicated on the maps on pages 12 and 14; other pertinent parts of this report are marked in red pencil on pages 10 and 22.

The unconsolidated glacial drift, which lies on the bedrock, is estimated to be approximately 40 to 65 feet thick, increasing toward the northwest. Well data on file at the Geological Survey for Section 28 suggest that this material consists of a pebbly clay material, called till, with some thin, discontinuous beds of sand. The sand, where encountered, is commonly found at or near the base of the drift; however, its yield is very small. This material is generally fine grained and cannot transmit water readily to a drilled or driven well. Wells in the NE¼ of Section 28 were completed in yellow and blue clay beds at a depth range of 28 to 27 feet. A well in the NW¼ of Section 28 was finished in gravel and hardpan mix at a depth of 16 to 28 feet.

The bedrock, of Pennsylvanian age, consists mostly of non-water-bearing shale with some thin, discontinuous beds of sandstone and limestone. The sandstone, and rarely the limestone, where present, generally yield only small domestic supplies and cannot be considered as a source of moderate or large supplies of groundwater. Water-bearing fractures are most likely to occur in the upper 75 feet of the bedrock. There are no water wells finished in the Pennsylvanian in this area. Below a depth of about 225 to 275 feet water is generally too highly mineralized for most uses.

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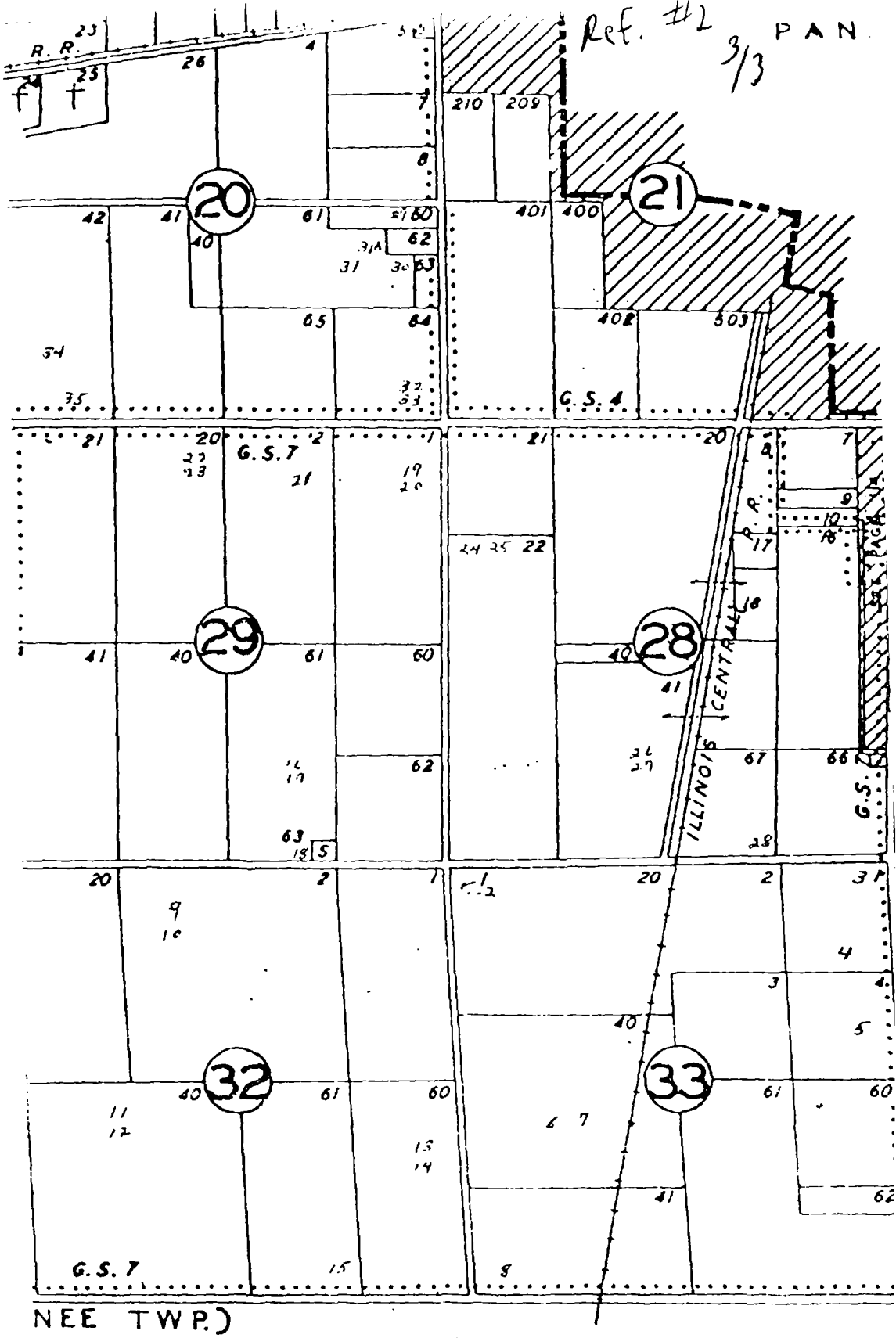
In summary, the probability of developing a domestic groundwater supply from the drift is poor to possibly fair (fig. 6). Water bearing beds in the drift materials are thin, discontinuous, fine-grained in texture and local. Large diameter dug wells are most suitable for this type of material. Drilling into the shallow bedrock is recommended only if an attempt to obtain a supply in the drift is unsuccessful. Only small supplies are expected from the bedrock (fig. 7). Because of the poor quality of water in deeper bedrock formations, drilling generally should not extend below a depth of about 275 feet.

Please furnish the State Geological Survey the following information on any new wells or test holes drilled: location; a driller's log recording all formations encountered during drilling and well completion data (screen, cementing, and casing records; appearance of water and static level, etc.).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